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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,877	01/09/2006	Hironori Endo	Q92020	1958
72875	7590	12/19/2007	EXAMINER	
SUGHRUE MION, PLLC			GARCIA JR, RENE	
2100 Pennsylvania Avenue, N.W.				
Washington, DC 20037			ART UNIT	PAPER NUMBER
			2853	
			NOTIFICATION DATE	DELIVERY MODE
			12/19/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

USPTO@sughrue.com  
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<b>Office Action Summary</b>	Application No. 10/563,877	Applicant(s) ENDO, HIRONORI	
	Examiner Rene Garcia, Jr.	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2007.
- 2a) ☐ This action is FINAL.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2,8,9,17-19 and 22-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2,8,9,17-19 and 22-33 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>11/19/07</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Specification*

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Printing Apparatus and Printing System with a Plurality of Movable Sensors for a Plurality of Features Detection.

### *Claim Objections*

2. Claim 5 is objected to because of the following informalities: Claim is dependent upon a now canceled claim; therefore its dependency can not be properly determined. Claim is being rejected to dependency with regards to claim 1, since claim 4 was dependent on claim 1. Claim either needs to be amended for appropriate dependency or canceled. Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1, 2, 8, 9, 17-19, 22-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tullis et al. (US 6,517,180) in view of Otsuki et al. (US 6,527,360).

**Tullis et al. disclose the following claimed limitations:**

\*regarding claims 2, 23, printing apparatus/**printer, 10/** (fig. 1; col. 4, lines 40-51),  
comprising:

\*carry unit that carries a medium/**paper, 18/** in a carrying direction (col. 4, lines 49-56)

\*movable head/**inkjet print head, 16/** that performs recording on a medium/**18/** using ink (fig. 1; col. 4, lines 45-61)

\*first sensor/**optical detector, 92/** (fig. 10; col. 12, lines 30-45) that can move together with said head/**16/** and that detects an edge of said medium/**18/** (col. 12, lines 45-50)

\*second sensor/**optical detector, 26/** (fig. 1; col. 4, line 64 – col. 5, line 8) that can move together with said head/**16/** and that detects a pattern formed on said medium/**18/** by said head/**16/**

\*regarding claims 1, 22, first sensor/**92/** detects regular reflection light from said medium/**18/** (col. 13, lines 46-57)

\*second sensor/**26/** provided separately from said first sensor/**92/**, detects diffuse reflection light from said medium/**18/** (col. 7, lines 13-55)

\*regarding claim 8, first sensor/**92/** includes a light-emitting section/**light sources, 40 & 42/** (fig. 3; col. 7, lines 13-27) and a light-receiving section/**sensor element array, 32/** (fig. 2; col. 5, lines 13-15)

\*light-emitting section/**40, 42/** of said first sensor/**92/** irradiates light onto said medium/**18/**

\*light-receiving section/**32/** of said first sensor/**92/** receives regular reflection light from said medium/**18/** (col. 13, line 46 – col. 14, line 3; col. 3, lines 13-23; first sensor/**92/** and second sensor/**26/** utilize similar structures col. 12, lines 34-45)

\*regarding claim 9, second sensor/92/ includes a light-emitting section/**light sources, 40 & 42/** (fig. 3; col. 7, lines 13-27) and a light-receiving section/**sensor element array, 32/** (fig. 2; col. 5, lines 13-15)

\*light-emitting section/40, 42/ of said second sensor/92/ irradiates light onto said medium/18/

\*light-receiving section/32/ of said second sensor/92/ receives regular reflection light from said medium/18/ (col. 5, lines 13-15; col. 7, lines 13-67; col. 3, lines 13-23)

\*regarding claims 17, 30, head/16/ can eject said ink while moving in a forward pass and in a return pass (col. 4, lines 45-58)

\*locations at which ink is to be ejected from said head/16/ are determined in accordance with the detection result of said second sensor/26/ (col. 4, line 64 – col. 5, line 8)

\*regarding claims 18, 31, type of said medium/18/ is detected from the detection result of said first sensor/92/ and the detection result of said second sensor/26/ (col. 11, line 62 – col. 12, line 13; col. 12, lines 54-60)

\*regarding claims 19, 33, head/16/ performs the recording on said medium/18/ in accordance with the type of said medium/18/ (col. 12, lines 12-13; col. 12, lines 58-60)

\*further regarding claim 23, printing system comprising a computer (known in the art to utilize a host device/computer/ with a printer to print images)

\*regarding claim 24, carry unit is controlled in accordance with the detection result of said first sensor/92/ (col. 11, line 62 – col. 12, line 60 – determination of medium type effects how the image is to be printed)

\*regarding claims 25, 32, head/16/ is controlled in accordance with the detection result of said first sensor/92/ (col. 12, lines 56-60)

\*regarding claim 26, first sensor/92/ detects a lateral edge/sides/ of said medium/18/; and a region onto which ink is to be ejected from said head/16/ is determined in accordance with the result of detecting said lateral edge/side/ (col. 13, line 64 - col. 14, line 3)

\*regarding claim 27, first sensor/92/ detects an upper edge/leading edge/ of said medium/18/ (fig. 10; col. 13, lines 46-63)

\*carry unit carries said medium/18/ to a print start position in accordance with the result of detecting said upper edge/leading edge/ (col. 12, line 61 – col. 13, line 63)

\*regarding claim 28, first sensor/92/ detects a lower edge/bottom edge/ of said medium/18/ (col. 13, lines 46-63)

\* region onto which ink is to be ejected from said head is determined in accordance with the result of detecting said lower edge/bottom edge/ (col. 13, lines 46-63; col. 14, lines 15-25)

\*regarding claim 29, ejection test of said head/**16/** is performed in accordance with the result of detecting said pattern with said second sensor/**26/** (col. 5, lines 2-8; details at col. 9, line 13 – col. 10, line 44)

**Tullis et al. does not disclose the following claimed limitations:**

\*regarding claim 2, wherein said first sensor is provided further upstream with regard to said carrying direction than said second sensor

\*regarding claim 5, light-emitting section and said light-receiving section of said first sensor are arranged in a direction in which said medium is carried

\*light-emitting section and said light-receiving section of said second sensor are arranged in a direction in which said head is moved

**Otsuki et al. teaches the following:**

\*regarding claim 2, wherein said first sensor/**33/** is provided further upstream with regard to said carrying direction than said second sensor/**33b/** (fig. 2, 15, 20, 21, 25; col. 6, lines 41-49; col. 7, lines 11-20; col. 16, lines 47-61 – all are related to two sensors being utilized for paper edge detection and positioning on carriage; col. 16, line 62 – col. 17, line 6; col. 19, lines 32-40; col. 22, lines 53 – col. 65 – all teach alternative positions for the sensors, therefore the placement of the sensors in Otsuki et al. are based on design choice and show that same consideration can be used for placement of sensors of Tullis et al.)

\*regarding claim 5, light-emitting section/**33d/** and said light-receiving section/**33t/** of said first sensor/**33/** are arranged in a direction in which said medium/**P/** is carried/**SS/** (fig. 2, 20; col. 7, lines 22-27)

\*light-emitting section/33d/ and said light-receiving section/33t/ of said second sensor/33b/ are arranged in a direction/MS/ in which said head/28/ is moved (fig. 20, 21; col. 7, lines 13-17; col. 16, lines 47-48)

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to utilize first sensor is provided further upstream with regard to said carrying direction than said second sensor; light-emitting section and said light-receiving section of said first sensor are arranged in a direction in which said medium is carried, light-emitting section and said light-receiving section of said second sensor are arranged in a direction in which said head is moved as taught by Otsuki et al. into Tullis et al. for the purpose of providing a sensor system that identifies both media edge and alignment correction based on a chosen design. The combination of Otsuki et al. and Tullis et al. is based on the both being related to the same art of sensors utilized on carriage systems for printer features determination.

#### ***Response to Arguments***

5. Applicant's arguments, see page 7, filed 01 November 2007, with respect to the rejection(s) of claim(s) 1, 2, and 23 under 103(a) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Tullis et al. and Otsuki et al.. Tullis et al. discloses a printer utilizing both a sensor for pattern detection and media edge detection as claimed in instant application.

#### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Puzio (US 6,332,663) and Walker (US 7,285,771) teach use of optical sensor in




printer systems for similar systems as claimed in instant application and that of art used in rejection.

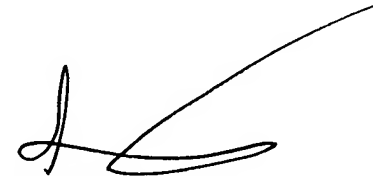
***Communication with the USPTO***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rene Garcia, Jr. whose telephone number is (571) 272-5980. The examiner can normally be reached on M-F 8:00AM - 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen D. Meier can be reached on (571) 272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
Rene Garcia Jr.  
12/07

  
STEPHEN MEIER  
SUPERVISORY PATENT EXAMINER